



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/820,575

04/07/2004

Scott E. Moore

MI22-2493

8575

21567 7590 10/15/2008  
WELLS ST. JOHN P.S.  
601 W. FIRST AVENUE, SUITE 1300  
SPOKANE, WA 99201

EXAMINER

PUNNOOSE, ROY M

ART UNIT

PAPER NUMBER

2886

MAIL DATE

DELIVERY MODE

10/15/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/820,575	<b>Applicant(s)</b> MOORE ET AL.	
	<b>Examiner</b> ROY M. PUNNOOSE	<b>Art Unit</b> 2886	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19-21, 49-52, 59, 60, 63, 65-69 and 71-84 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-21, 49, 52, 59-60, 63, 65-69, 71-80, 82 is/are rejected.
- 7) ☒ Claim(s) 50, 51, 81, 83 and 84 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

**DETAILED ACTION**

***Response to Amendment***

1. Applicant's amendment filed on 06/17/2008 is acknowledged. Claims 1-18, 22-48, 53-58, 61-62, 64 and 70 have been previously cancelled. In the amendment filed, the applicant has amended claim 50, and introduced new claims, claims 82-84. Claims 19-21, 49-52, 59-60, 63, 65-69 and 71-84 are pending in the application.

2. Applicant's argument(s) presented in the papers filed on 06/17/2008 have been fully considered but they are not persuasive and has necessitated the Examiner to make this office action FINAL.

3. THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

***Response to Arguments***

4. Claim 19 is directed to an apparatus comprising a container configured to provide a subject material in a substantially static state, and a plurality of sensors individually configured to monitor turbidity of the subject material.

The applicant has contended that claim 19 is allowable over prior art Topol (US\_3,441,737) and Teders (US\_3,809,243) and has presented arguments supporting the allowability of claim 19 as follows:

Art Unit: 2886

Referring to independent claim 19, the apparatus positively recites a plurality of sensors individually configured to monitor turbidity of subject material. The Office at page 3 of the Action states that Topol fails to teach the positively-claimed plural sensors and relies upon the teachings of Teders to cure the deficiencies of Topol.

However, the teachings of Teders relied upon by the Office only teach a single sensor configured to monitor turbidity. Accordingly, even if the teachings of the references are combined, the combination fails to teach or suggest the positively claimed limitations of the apparatus comprising plural sensors individually configured to monitor turbidity of the subject material. The art is void of teaching the claimed apparatus and the Office has failed to establish a proper 103 rejection for at least this reason. Applicants respectfully request withdrawal of the 103 rejection in the next Action.

Furthermore, to the contrary of the allegation on page 4 of the Action regarding positive claim limitations reciting an intended use, Applicants submit the limitations are proper structural limitations stating that the sensors are individually configured to monitor turbidity using particulate matter of the subject matter and the particulate matter monitored by one of the sensors is different than the particulate matter monitored by another of the sensors. The positively claimed arrangement of plural sensors is a structural difference which distinguishes the claim from the prior art as evidenced by the complete absence of the claimed limitations of plural sensors from the prior art. None of the prior art references teach the claimed limitations of the apparatus comprising plural sensors individually configured to monitor turbidity and the claim is allowable for at least this compelling reason.

Teders also teaches use of a sensor on a tube to monitor fluid dynamically passing through the tube and there is no teaching or suggestion of repositioning of multiple configurations of the sensors of Teders in a settling tank of Topol to provide information at different levels.

Contrary to the allegation on pages 4-5 of the Action, the Office has cited no teachings that Teders is usable to monitor material in a container but to the contrary monitors material dynamically flowing through a tube per col. 3, lines 32+.

Art Unit: 2886

Positively-recited limitations of claim 19 are not disclosed nor suggested by the prior art references taken alone or in combination and the 103 rejection is improper for this compelling reason.

At page 3 of the Action, it is alleged that it is obvious to replace the sensor lowering mechanism of Topol with a plurality of sensors. Applicants also respectfully submit that the proposed modification to Topol amounts to a significant and entire redesign of the sensor arrangement explicitly disclosed by Topol and claim 19 is not obvious. In particular, the MPEP 2143.01 VI (8<sup>th</sup> ed., rev. 6) citing *In re Retli*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) provides that a substantial reconstruction and redesign of the elements shown in the primary reference may be sufficient to overturn an obviousness rejection. Applicants respectfully submit that the complete removal of the sensor lowering mechanism of Topol entirely changes the fundamental operation of Topol and is an impermissible modification. Applicants respectfully request withdrawal of the 103 for this additional compelling reason.

Applicants refer to MPEP 2141.02VI (8<sup>th</sup> ed., rev. 6) entitled **PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS**. This MPEP section further states that a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303 (Fed. Cir. 1983). Such teaching away is the antithesis of the art's suggesting that the person of ordinary skill go in the claimed direction. Essentially, teaching away from the art is a *per se* demonstration of lack of obviousness. *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988). Here, Topol clearly

Art Unit: 2886

teaches away from the complete redesign of the Topol teachings proposed by the Office by explicitly disclosing an arrangement where a sensor is lowered into a material of interest and information provided at various depths of the sensor in the material during the lowering. The explicit, complete and thorough disclosure of the sensor lowering arrangement of Topol teaches away from the substantial redesign of the arrangement of Topol to accommodate the Teders teachings with no benefit or improvement.

In addition to the significant non-obvious modification to the Topol teachings proposed by the Office, Applicants respectfully submit that the Office has failed to provide an adequate rationale for combining the reference teachings. The Supreme Court has stated that some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness is needed. *KSR Int'l v. Teleflex, Inc.*, 127 S.Ct. 1727, 1740, 82 USPQ2d 1385, 1395 (2007). MPEP 2142 (8<sup>th</sup> ed., rev. 6) further provides that rejections on obviousness *cannot be sustained with mere conclusory statements*; instead there must be some articulated reasoning with some rational underpinning to support a legal conclusion of obviousness and which must be factually supported per MPEP 2142.

At pages 3-4 of the Action, the Office states that the complete redesign of Topol including removal of the sensor lowering mechanism would improve the accuracy in measurement or monitoring of turbidity. The Office has provided no support for this allegation apart from the bald cursory arguments. To the contrary of the position of the Office, Teders is directed towards measuring turbidity in a dialysis application where the material dynamically passes through a tube per col. 3, lines 32-35. The Office has provided no support that the modification of replacing the sensor lowering mechanism in

Art Unit: 2886

the settling tank of Topol by the use of a sensor configured for use in monitoring fluid passing through a tube of Teders would provide any benefit or improvement. Furthermore, the Office has provided no support for the bald allegation that the sensor of Teders for measuring turbidity in dynamically flowing material obtains a more accurate representation of turbidity of material in a container. Applicants have failed to uncover any teachings in Teders of monitoring material in a container let alone any teachings or evidence in the art that use of the sensor of Teders to monitor material in a container would provide any improvement over the design of Topol Applicants respectfully submit that the Office has failed to provide a proper articulated reasoning with a rational underpinning as required for a proper 103 rejection and the 103 rejection is in error.

Furthermore, according to MPEP 2143.02 (8<sup>th</sup> ed., rev. 6), a proper rationale to support a 103 rejection is that one of ordinary skill in the art could have combined the elements as claimed by known methods with no change in their respective functions. *KSR International Co. v. Teleflex*, 82 USPQ2d 1385, 1395 (2007) and MPEP 2143.02 (8<sup>th</sup> ed., rev. 6). In the instant rejection, the arrangement of Topol is completely revised and changed to remove the sensor lowering mechanism which illustrates the improper rationale and erroneous nature of the 103 rejection

Applicants respectfully request withdrawal of the 103 rejection for at least the above-mentioned numerous reasons.

The claims which depend from claim 19 are in condition for allowance for the reasons discussed above with respect to the independent claim as well as for their own respective features which are neither shown nor suggested by the cited art

5. In response to the above argument, the Examiner presents the following reasons why claim 19 is not allowable over prior art Topol (US\_3,441,737) and Teders (US\_3,809,243).

- A. Topol teaches of an apparatus comprising: a container/tank (see col.1, line 13) configured to provide a subject material in a substantially static state (in a settling tank – see abstract); and at least one sensor 12 provided at a predefined position relative to the container to monitor the turbidity of the subject material at a desired vertical position of the container (see col.1, lines 51-54), in a system for

Art Unit: 2886

measuring/monitoring turbidity of a subject material in static state in a container.

In essence, Topol teaches the concept of an apparatus for monitoring turbidity of a subject material at a desired vertical position, wherein the subject material is in a substantially static state in the container.

- B. Topol is silent on individually configuring a sensor to monitor turbidity of a subject material.
- C. Teders teaches of a sensor 10 that is/can be individually configured to monitor turbidity of a subject material (see col.1, lines 3-6, line 29; line 67; col.5, lines 28-34; col.7, lines 23-29) in a system for measuring/monitoring turbidity of a subject material in a container. In essence, Teders teaches the concept of individually configuring a sensor to monitor turbidity of a subject material.
- D. In view of Teders' teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Teders' teaching of individually configuring a sensor to monitor turbidity of a subject material into Topol's teaching of an apparatus for monitoring turbidity of a subject material at a desired vertical position, wherein the subject material is in a substantially static state in the container due to the fact that Topol's sensor/probe lowering mechanism can be eliminated for monitoring turbidity at different levels and/or locations, and further, Teders' individually configured sensor when placed at desired levels/locations, would not disturb or agitate or displace the particulate matter in the subject material, and therefore improve the accuracy in the



Art Unit: 2886

measurement or monitoring of turbidity, in a system for measuring/monitoring turbidity of a subject material in static state in a container.

- E. With regard to the claimed limitation “a plurality of sensors individually configured to monitor turbidity of the subject material”, duplicating or replicating Teders’ individually configured sensor to be placed at a plurality of locations for monitoring turbidity with different particle size or type at said different locations would have been glaringly obvious to one of ordinary skilled in the art at the time the invention was made because the very purpose of “individual configuration” is for monitoring turbidity of a subject material with different particle size or type. Further, mere duplication of parts has no patentable significance unless a new and unexpected result is produced.
- F. With regard to the limitation “the particulate matter monitored by one of the sensors is different than the particulate matter monitored by another of the sensors,” a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In the instant case, Teders’ sensor determines the turbidity by passing light through a subject material and measuring the turbidity from the intensity of light incident on a detector, and Teders teaches of adjusting the sensitivity of the sensor for different turbidity level (see col.1, line 66- col.2, line 5). Therefore, by adjusting the sensitivity, Teders’ sensor is capable of monitoring different particulate matter in

Art Unit: 2886

the subject material (see col.1, lines 3-6, line 29; line 67; col.5, lines 28-34; col.7, lines 23-29). Therefore it meets the claim. Further, Teders' sensor is mounted over/around a glass tube/container 20 (see col. 2, lines 64-66) and may be positioned at any desired location on the tube/container 20. By placing a plurality of Teders' sensors at different locations, and by adjusting the sensitivity of individual/each sensor for monitoring different particulate matter and/or turbidity level, different particulate matter may be monitored by different sensors at different locations. Therefore it meets the claim.

G. In summary, the desirability of monitoring turbidity of a subject material wherein the subject material is in a substantially static state in the container is clearly stated by Topol (see abstract; col.1, lines 49-55). And, Teders provides an individually configurable sensor for measuring turbidity of a subject material in a container. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Teders' teaching of individually configuring a sensor to monitor turbidity of a subject material into Topol's teaching of an apparatus for monitoring turbidity of a subject material at a desired vertical position, wherein the subject material is in a substantially static state in the container due to the fact that Topol's sensor/probe lowering mechanism can be eliminated for monitoring turbidity at different levels and/or locations, and further, Teders' individually configured sensor when placed at desired levels/locations, would not disturb or agitate or displace the particulate matter in the subject material, and therefore improve the accuracy in the measurement or

Art Unit: 2886

monitoring of turbidity, in a system for measuring/monitoring turbidity of a subject material in static state in a container.

6. With regard to the applicants argument that Teders does not teach or suggest repositioning of multiple configurations of the sensors of Teders in a settling tank of Topol to provide information at different levels, the Examiner responds that “individual configuration” implies that “each is configured separately” which implies a plurality of sensors as taught by Teders (see col.1, lines 3-6, line 29; line 67; col.5, lines 28-34; col.7, lines 23-29). With regard to the claimed limitation “a plurality of sensors individually configured to monitor turbidity of the subject material”, duplicating or replicating Teders’ individually configured sensor to be placed at a plurality of locations for monitoring turbidity with different particle size or type at said different locations would have been glaringly obvious to one of ordinary skilled in the art at the time the invention was made because the very purpose of “individual configuration” is for monitoring turbidity of a subject material with different particle size or type. Further, mere duplication of parts has no patentable significance unless a new and unexpected result is produced.

7. With regard to the applicants contention that Teders device monitors fluid dynamically passing through a tube, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In the instant case, Teders’ sensor determines the turbidity by passing light through a subject material and measuring the turbidity from the intensity of light incident on a detector, and Teders teaches of adjusting the sensitivity

Art Unit: 2886

of the sensor for different turbidity level (see col.1, line 66- col.2, line 5). Therefore, by adjusting the sensitivity, Teders' sensor is capable of monitoring different particulate matter in the subject material (see col.1, lines 3-6, line 29; line 67; col.5, lines 28-34; col.7, lines 23-29). Teders' device is capable of monitoring fluid dynamically passing through a tube, or, fluid that is static in a tube, because the sensor determines the turbidity by passing light through a subject material and measuring the turbidity from the intensity of light incident on a detector, and the flow status of the fluid is immaterial to the monitoring of turbidity. Teders' structure is capable of performing the intended use, and therefore it meets the claim.

8. With regard to applicant's argument that claim 20 is allowable over prior art, Topol teaches monitoring turbidity at different vertical positions (as detailed in above paragraphs), and Teders' teaches that the sensor 10 is "conveniently inserted" (indicating conveniently positioned) over a fluid line 50 (see col.3, lines 32-35 and Figures 1-3). Therefore it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have sensors at different vertical positions for the purpose of monitoring turbidity at a plurality of vertical positions.

9. With regard to applicant's argument that claim 60 is allowable over prior art because Teders device monitors fluid dynamically passing through a tube, please see reasoning stated in paragraph 7 above.

10. With regard to claim 63, the applicant argues the following:

Art Unit: 2886

Referring to claim 63, Topol is directed to sewage applications and Teders is directed to dialysis applications. The prior art references taken alone or in combination fail to teach or suggest *a process chamber configured to receive and process a semiconductor workpiece using the subject material* in combination with the other limitations as explicitly claimed. Claim 63 is allowable.

With regard to claim 63, Figures 1, 2 and 3 shows the apparatus of claim 1 connected to a process chamber configured to receive and process a semiconductor workpiece using the subject material.

Since the parent claim, claim 1, is claiming "an apparatus" and not a "semiconductor processing apparatus", it would have been obvious to one of ordinary skilled in the art at the time the invention was made to conclude that the claimed apparatus can be connected to any type of processing device such as a dishwasher, textile cleaner, etc. for monitoring turbidity.

11. With regard to applicant's argument that claim 49 is allowable over prior art because it provides subject material in a substantially static condition, please see reasoning stated in paragraph 7 above. Further, Teders's sensor monitors turbidity of a subject material at a predefined vertical position without displacing the subject material.

12. With regard to applicant's argument that claim 59 is allowable over prior art because it provides subject material in a substantially static condition, please see reasoning stated in paragraph 7 above.

13. Claim 74 is rejected for the same reasons of rejection of claim 69. (Please see rejection of claim 69 below).

14. Claim 82 is rejected because Teders' sensor is individually configured and does not displace subject material (see col.1, lines 3-6, line 29; line 67; col.5, lines 28-34; col.7, lines 23-

Art Unit: 2886

29). With regard to the claimed limitation “sensors are individually configured to monitor turbidity of the subject material”, duplicating or replicating Teders’ individually configured sensor to be placed at a plurality of locations for monitoring turbidity with different particle size or type at said different locations would have been glaringly obvious to one of ordinary skill in the art at the time the invention was made because the very purpose of “individual configuration” is for monitoring turbidity of a subject material with different particle size or type. Further, mere duplication of parts has no patentable significance unless a new and unexpected result is produced.

15. In summary, the desirability of determining turbidity level of a subject material in static state at different vertical positions of a container is clearly stated by Topol (see abstract; col.1, lines 49-55). And, Teders provides an individually configurable sensor for measuring turbidity of a subject material in a container. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a plurality of Teders' sensors placed at different predefined positions relative to the container into Topol's system, for monitoring different particulate matter and/or turbidity level by different sensors at different locations, to obtain a more accurate representation of the turbidity level of a subject material in static state in a container.

***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2886

17. Claims 19-21, 60, 63, 65-69, 75-77 and 82-84 are directed to an *apparatus* (to monitor turbidity). Claims 49-52, 59, 71-74 and 78-81 are directed to a turbidity monitoring *method*.

**18. Claims 19-21, 60, 63, 65-66, 68, 75-76 and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Topol (US\_3,441,737) in view of Teders (US\_3,809,243).**

19. Claims 19-20, 60 and 75-76 are rejected because:

- A. Topol teaches of an apparatus comprising: a container/tank (see col.1, line 13) configured to provide a subject material in a substantially static state (in a settling tank – see abstract); and at least one sensor 12 provided at a predefined position relative to the container to monitor the turbidity of the subject material at a desired vertical position of the container (see col.1, lines 51-54), in a system for measuring/monitoring turbidity of a subject material in static state in a container.
- B. However, Topol does not teach of a plurality of sensors individually configured to monitor turbidity of the subject material, wherein the sensors are individually configured to monitor the turbidity using particulate matter of the subject material, and wherein the particulate matter monitored by one of the sensors is different than the particulate matter monitored by another of the sensors, in a system for measuring/monitoring turbidity of a subject material in static state in a container.
- C. Teders teaches of a sensor 10 that is/can be individually configured to monitor turbidity of a subject material (see col.1, lines 3-6, line 29; line 67; col.5, lines 28-34; col.7, lines 23-29) in a system for measuring/monitoring turbidity of a subject material in a container.
- D. In view of Teders' teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a plurality of Teders' individually

Art Unit: 2886

configured sensors placed at different predefined positions relative to the container into Topol's system, due to the fact that Topol's sensor/probe lowering mechanism can be eliminated for monitoring turbidity at different levels and/or locations, and further, Teders' individually configured sensors when placed at desired levels/locations, would not disturb or agitate the particulate matter in the subject material, and therefore improve the accuracy in the measurement or monitoring of turbidity, in a system for measuring/monitoring turbidity of a subject material in static state in a container.

- E. With regard to the limitation "the particulate matter monitored by one of the sensors is different than the particulate matter monitored by another of the sensors," a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In the instant case, Teders' sensor determines the turbidity by passing light through a subject material and measuring the turbidity from the intensity of light incident on a detector, and Teders teaches of adjusting the sensitivity of the sensor for different turbidity level (see col.1, line 66- col.2, line 5). Therefore, by adjusting the sensitivity, Teders' sensor is capable of monitoring different particulate matter in the subject material (see col.1, lines 3-6, line 29; line 67; col.5, lines 28-34; col.7, lines 23-29). Therefore it meets the claim. Further, Teders' sensor is mounted over/around a glass tube/container 20 (see col. 2, lines 64-66) and may be positioned at any desired location on the tube/container 20. By placing a plurality of Teders' sensors at different locations, and by adjusting the sensitivity of individual/each sensor for monitoring different particulate



Art Unit: 2886

matter and/or turbidity level, different particulate matter may be monitored by different sensors at different locations. Therefore it meets the claim.

F. In summary, the desirability of determining turbidity level of a subject material in static state at different locations of a container is clearly stated by Topol (see abstract; col.1, lines 49-55). And, Teders provides an individually configurable sensor for measuring turbidity of a subject material in a container. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a plurality of Teders' sensors placed at different predefined positions relative to the container into Topol's system, for monitoring different particulate matter and/or turbidity level by different sensors at different locations, to obtain a more accurate representation of the turbidity level of a subject material in static state in a container.

20. Claim 21 is rejected for the same reasons of rejection of claim 19 above and because Teders' sensor comprises a source 30 configured to emit electromagnetic energy towards the container 20, and a receiver 32 configured to receive at least some of the electromagnetic energy (see Figure 2).

21. Claim 63 is rejected for the same reasons of rejection of claim 19 above and because, in view of Topol's and Teders' teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the container containing the subject material included/connected to a process chamber configured to receive and process a semiconductor workpiece using the subject material, because the turbidity of a fluidic subject material, such as a slurry from a semiconductor wafer processor, can be monitored/measured for maintaining a desired level of particular matter in the fluidic subject material. This is very similar to Teders'

Art Unit: 2886

teachings where turbidity monitor is connected to or included in a dialysis equipment, which is a blood processor (instead of a semiconductor processor).

22. Claim 65 is rejected for the same reasons of rejection of claim 19 above and because Topol teaches of at least one sensor is configured to monitor settling of the particulate matter within the fluid, and for reasons stated in the rejection of claim 19 above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include Teders's sensor also configured to monitor settling of the particulate matter within the fluid.

23. Claim 66 is rejected for the same reasons of rejection of claim 19 above and because Topol teaches of monitoring a precipitation rate of the particulate matter within the fluid (see col.2, lines 4-11).

24. Claim 68 is rejected for the same reasons of rejection of claim 19 above and because in view of Topol's and Teders' teachings, and Topol's teaching of monitoring all particulate matter suspended in the fluid at a respective vertical position of the container, it would have been obvious to one of ordinary skill in the art at the time the invention was made to orient the sensor in any desired manner to optimize the monitoring of any particulate matter suspended in the fluid subject material.

25. Claim 82 is rejected because Teders' sensor is individually configured and does not displace subject material (see col.1, lines 3-6, line 29; line 67; col.5, lines 28-34; col.7, lines 23-29). With regard to the claimed limitation "sensors are individually configured to monitor turbidity of the subject material", duplicating or replicating Teders' individually configured sensor to be placed at a plurality of locations for monitoring turbidity with different particle size or type at said different locations would have been glaringly obvious to one of ordinary skilled in

Art Unit: 2886

the art at the time the invention was made because the very purpose of “individual configuration” is for monitoring turbidity of a subject material with different particle size or type. Further, mere duplication of parts has no patentable significance unless a new and unexpected result is produced.

**26. Claims 67 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Topol (US\_3,441,737) in view of Teders (US\_3,809,243) and further in view of Hungerford et al (US\_5,172,332).**

27. Claim 67 is rejected for the same reasons of rejection of claim 19 above and because:

- A. Topol and Teders teach all claim limitations except for a computer coupled with the sensors and configured to access information regarding the turbidity of the subject material. Topol teaches of sensor output to a continuous recorder for having a hard copy of the data for analysis, in a system for measuring/monitoring turbidity of a subject material in static state in a container.
- B. Hungerford et al (Hungerford hereinafter) teaches of a computer coupled to sensors and configured to access information regarding various parameters of a subject material (see col.1, line 44; col.2, lines 58 - col.3, line 32; Figures 1 and 7) in a system for measuring/monitoring various parameters, including turbidity, of a subject material in a container.
- C. In view of Hungerford’s teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Hungerford’s teaching of connecting a sensor to a computer into Topol's system, due to the fact that it would provide a means to automatically collect and store subject material data into the computer

Art Unit: 2886

for analysis to adjust the turbidity to a desired level for improved processing of a semiconductor workpiece.

28. Claim 77 is rejected for the same reasons of rejection of claims 19 and 67 above and because:

- A. Topol and Teders teach all claim limitations except for a computer configured to calculate information regarding settling of particulate matter within the subject material using information from the one and other sensors, in a system for measuring/monitoring turbidity of a subject material in static state in a container.
- B. Hungerford et al (Hungerford hereinafter) teaches of a computer coupled to sensors and configured to access information regarding various parameters of a subject material from different sensors, creating a database, manipulating the data for statistical analyses, spreadsheeting or the like by a conventional computer provided with a suitable software program (see col.1, line 44; col.2, lines 58 - col.3, line 32, specifically col.3, lines 6-9; Figures 1 and 7).
- C. In view of Hungerford's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to calculate information regarding settling of particulate matter within the subject material using information from the one and other sensors because Hungerford's teaching of accessing information regarding various parameters of a subject material from different sensors, creating a database, manipulating the data for statistical analyses, spreadsheeting or the like are performing similar tasks as being claimed, in a system for measuring/monitoring turbidity of a subject material in a container.

Art Unit: 2886

**29. Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Topol (US\_3,441,737) in view of Teders (US\_3,809,243) and further in view of Meyer (US\_4,390,283).**

30. Claim 69 is rejected for the same reasons of rejection of claim 19 above and because:

- A. Topol and Teders teach all claim limitations except for container containing the subject material is configured to rotate about an axis during the monitoring of turbidity by the sensors, in a system for measuring/monitoring turbidity of a subject material in static state in a container.
- B. Meyer teaches of a container 12 containing a subject material is configured to rotate about an axis during the monitoring of turbidity by the sensors, in a system for measuring/monitoring turbidity of a subject material in a container (see col.3, lines 17-22; Figures 1 and 2).
- C. In view of Meyer's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Meyer's teaching of rotating the container about an axis during the monitoring of turbidity into Topol's system, due to the fact that the rotation of the sample container causes a reduction in the optical distortion caused by imperfections in the container walls resulting in more accurate monitoring/measuring of turbidity in a system for measuring/monitoring turbidity of a subject material in a container.

**31. Claims 49, 52, 59, 71-74 and 78-80 are rejected for the same reasons of rejection of claims 19-21, 60, 63, 65-69, 75-77 and 82 above because claims 49, 52, 59, 71-74 and 78-80**

Art Unit: 2886

**are directed to a turbidity monitoring method implemented using the apparatus claimed in claims 19-21, 60, 63, 65-69, 75-77 and 82 and they have similar limitations.**

32. The arguments presented by the applicant are not convincing. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

33. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Allowable Subject Matter***

34. Claims 50, 51, 81, 83 and 84 have allowable subject matter.

35. In claim 50, simultaneously monitoring the turbidity of the subject material at another predefined vertical position within the container at the same time as the monitoring at the predefined vertical position, in combination with all the limitations of its parent claim is allowable subject matter.

36. In claim 51, emitting electromagnetic energy towards the subject material, the electromagnetic energy being not visible to humans; and receiving at least some of the

Art Unit: 2886

electromagnetic energy, in combination with the rest of the limitations of claim 51 is allowable subject matter.

37. Claim 81 is allowable because it is dependent on an allowable claim, claim 50.

38. Claim 83 is allowable for reasons similar to the allowability of claim 50.

39. Claim 84 is allowable because prior art does not teach attaching to the container and detaching from the container without disruption of the subject material within the container, in combination with the rest of the limitations of claim 84 is allowable subject matter.

#### ***Claim Objections***

40. Claims 50, 51, 81, 83 and 84 are objected to because they are dependent on a rejected base claim and would be allowable if the rejection of the base claim can be overcome.

#### ***Contact/Status Information***

41. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Roy M. Punnoose** whose telephone number is **(571)272-2427**.

The examiner can normally be reached on 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Tarifur R. Chowdhury** can be reached on **571-272-2287**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2886

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Roy M. Punnoose/**  
Primary Patent Examiner  
Art Unit 2886